Eco-friendly

Significant expansion of renewable energy: increasing the share of renewable energy in power generation mix up to 20% by 2030

Smart

Distributed generation system + the 4th industrial revolution new technology → Fostering IoE-based New Energy Industry

- IoE (Internet of Energy): Integrated energy systems with electricity generation-transmission, distribution and consumption by utilizing ICT
National Target of Renewable Energy 3020

**Goals**

- Reaching a goal to increase the share of renewable energy up to **20% by 2030**
- Expanding the deployment of wind and solar energy

**New Generation Capacity (18-30): 48.7GW**

- **Wind Energy**: 16.5GW
- **Solar Energy**: 30.8GW

- Over 95% of the new capacity

**Implementation Strategy**

- **Deploy**: Bio energy-oriented
  - The whole clean energy-oriented, focusing on solar and wind energy

- **Main Players**: Business operators-oriented
  - Encouraging the participation of local residents and the public in general

- **Approaches**: Rampant development in Site
  - Planned site development

**Implementation Tasks**

- Expanding cooperatives and social enterprises
- Expanding solar PVs in rural areas
- Expanding solar PVs for urban areas
- Increasing large-scale projects led by public and private power operators

- Korean FIT system
- Planned site system
- Solar PV for rural areas
Evolution of the Wind Energy Policy

◇ The current government has been pushing for a transition to environmentally friendly renewable energy
◇ Significant renewable energy policies were announced to help cement the supply of renewable energy

1. Renewable energy 3020 implementation plan (Dec. ‘17)
Aim to increase the proportion of renewable energy to 20% of the total energy supply by 2030
* Supply of additional 48.7GW from renewable energy (Solar panel 30.8, wind power 16.5) from 2018 to 2030

2. Enhancement plan for the competitiveness of renewable energy (Apr. ‘19), the third basic energy plan (Jun., ‘19)
- Aim to increase the proportion of renewable energy to 30~35% of the total energy supply by 2040
- Develop core parts (blades, generator, etc.) with Korean technologies by 2022 and next-generation technologies for mega-scale and floating turbines in the long-run
  • Large-scale (8MW) turbines (‘18-‘22, KRW28.5bn), floating system R&D (‘20-‘24, KRW38bn)
3. Korean New Deal Total Plan (Jul.’20), wind power development plan (Jul.’20)

Triple 2019’s solar and wind power facilities by 2025
- Renewable energy (solar & wind): 12.7GW(’19) → 26.3GW(’22) → 42.7GW(’25)

Adopted a cluster system (Oct. ’20), revised Enforcement Decree of the Ordering Act (Aug.’20), and set up an integrated licensing body (one-stop-shop) to generate 12GW from offshore wind power by 2030

4. The fifth new and renewable energy master plan

Set a 2034 goal of new and renewable energy proportion to 25.8% (22.2% from renewable, 3.6% from new)
- 2034 facility capacity target (business + residential) is 82.2GW(Cumulative)

Proactively suggest challenges and response directions to achieve carbon neutrality by 2050
- 1) Groundbreaking potential expansion. Development method innovation;
- 2) Technological breakthrough; 3) Transformation of the power system; 4) Green hydrogen expansion and energy system consolidation

The past three years has seen renewable energy surpass its supply targets
- Renewable and new energy facility size (GW): 2.1(’17) → 3.4(’18) →4.4(’19) →4.8(’20 est.)
- Renewable energy contribution to total power generation (%), excluding waste: 3.5(’17) → 4.2(’18) → 5.0(’19) →5.6(’20 est.)
**Cumulative Installation Capacity 2020**
- 1,641 MW installed (Offshore 3 site 124.5 MW),
- Total 106 Wind farms, 739 WTGs
A few turbine OEMs and Mid/Small-size component suppliers

- **WTG** 4 Turbine OEMs: Doosan, Unison, Hyosung, Hanjin Ind., focusing on 2~3MW WTGs
  * Main Product: (Doosan) 3MW / 5.5MW, 8MW (Developing), (Unison) 2.3MW / 4.2MW, 10MW (Developing) (Hanjin) 2MW WTG, 4.XMW (Developing)

- **Component** Multiple suppliers, mainly tower and forging components
  But Lack of production base for key and bespoke components (blade, gearbox etc.) on each turbines.
  * Only 1 ~ 2 Blade, Gearbox, Generator, and PCS suppliers are existed in Korea.

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Wind Resource potentials (Onshore)
- Theoretical: 499GW
- Technical: 352GW
- Market-wise: 17GW

On/Offshore wind resource map: [https://kredc.kier.re.kr/kierflex/#](https://kredc.kier.re.kr/kierflex/#)

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Wind Industry in Korea
Barriers of the Deployment

Biggest Barrier

Site permitting process,
- should be handled by many different authorities,
- environmental aspects

Lack of social acceptance
- opposition by local residents

Grid connection and Curtailment (in Jeju) is an emerging issue in Korea
“The measures to facilitate land-based wind project”
the Government party in National Assembly and Ministry (many related authorities) jointly prepared and announced in August 2019, based on the voice of the fields

1) Provide the national wind map which contains as topographical permitting/prohibiting information and make the consulting step to consider the environmental aspect
2) Clarify and re-examination of all related regulations regarding the mountain areas.
3) Establish a new public organization which has full charge of supporting each project through consulting and advising all the process from an initial development stage to an operation

It was expected that 41 postponed projects (around 2.6 GW) among surveyed 80 postponed on-going land-based projects will experience direct improvement in their progress

"Large-Scale Offshore Wind Farm Area" is being prepared
- "Renewable Energy Complex" led by local governments

<Expected Benefits>
- Studies on Environmental Impact & Social Acceptance
- Grid Connection Investment

⇒ Key:
1) Collaboration with local residents and industry - Win-Win Strategy
2) Harmonized plan with multiple authorities. – Council with MOTIE and MOF

Offshore Wind Development Plan

Three offshore wind energy development plans

- Join the global top 5 countries in offshore wind energy by generating 12GW by 2030
- Create a symbiotic environment to co-prosper with the fishing industry and neighboring residents

3 development plans:

- Government-led site developments and simplified licensing and permit process
- Increase resident acceptance and decrease environmental impact
- Strengthen the industry competitiveness by linking with large projects

- Create 87,000 jobs through generating 12GW by 2030
- Support symbiotic relationships by sharing the wind energy profits with the local communities
Shinan Offshore Wind Power Project
: the world’s largest offshore wind farm
Stage 1 : from 2023, 4.1GW
Stage 2 : from 2026, 4.1GW
Ulsan City: floating offshore wind power from 2023 by signing MOUs with 6 investors (Korea National Oil Corporation, Shell-CoensHexicon, GIG, CIP-SK E&S, KFWind, Equinor)

The 4.6GW Southeast Region Project
The main policy to support wind energy development is Renewable Portfolio Standards (RPS)

- Regulation is applied to electricity suppliers providing more than 500MW
- RPS Target Ratio Increase annually as follows
- RPS mandatory supply ratio, currently 10% → to be expanded to 25% in 2030

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감사합니다

Thank you

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